IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Re:		
	Application of:	Jean-Paul MARDON et al.
	Application No.:	10/728,237
	Filed:	December 3, 2003
	Art Unit:	1793
	Examiner:	John P. Sheehan
	Attorney Docket No.:	12928/10022; 569.1032DIV
	Title:	**ALLOY AND TUBE FOR NUCLEAR FUEL ASSEMBLY AND METHOD FOR MAKING SAME**

Mail Stop: APPEAL BRIEF – PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

April 26, 2010

APPELLANTS' REPLY BRIEF UNDER 37 C.F.R. §41.41

Sir:

Appellants submit this Reply Brief for consideration of the Board of Patent Appeals and Interferences (the "Board") in response to the Examiner's Answer dated February 24, 2010 and in support of their appeal of the Final Rejection dated May 18, 2009. Appellants respectfully reassert each of the arguments asserted in Appellants' Brief dated November 10, 2009, and provide herein only a rebuttal of arguments raised in the Examiner's Answer.

No fee is believed required. If any fee is required at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

ARGUMENTS

The following additional remarks are submitted for consideration by the Board under 37 CFR §41.41.

Claims 7 to 11 **[sic 12]** were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,649,023 to Sabol et al. (hereinafter "Sabol") in view of U.S. Patent No. 5,832,050 to Rebeyrolle et al. (hereinafter "Rebeyrolle") and U.S. Patent No. 5,478,419 to Dumas et al. (hereinafter "Dumas").

Sabol fails to teach or show "0.03 to 0.25% in firstly of iron; secondly, at least one of the elements from the group consisting of chromium and vanadium; 0.8 to 1.3% of niobium; less than 2000 ppm of tin; 500 to 2000 ppm of oxygen; less than 100 ppm of carbon; 5 to 35 ppm of sulfur; and less than 50 ppm of silicon," as recited in claim 7. The Examiner asserts on page 4 of the Examiner's Answer that Sabol teaches "up to 0.25% iron, chromium or vanadium." This however, is not the same as "0.03 to 0.25% in firstly of iron; secondly, at least one of the elements from the group consisting of chromium and vanadium" as claimed. Sabol fails to teach both Fe and Cr and V in the concentrations as claimed. Sabol uses one of Fe, Cr, Mo, V, Cu, Ni and W (See Col. 2, lines 57 to 59), nor has the Examiner addressed the language of claim 7 or any possible modification.

Moreover, Cr, Mo, V, Cu, Ni and W cannot be considered as completely equivalent to Fe as to their effects on the properties of alloys. In particular, Fe, Cr and V do not have the same metallurgical effects and therefore, modifying Sabol to obtain the present invention would not have been obvious and certainly not in the concentrations as claimed.

Claims 9 and 10 Argued Separately

Cr, Mo, V, Cu, Ni and W cannot be considered as completely equivalent to Fe as to their effects on the properties of alloys. In particular, Fe, Cr and V do not have the same metallurgical effects and therefore, modifying Sabol to obtain the present invention would not have been obvious and certainly not in the concentrations as claimed. In the Examiner's Answer on page 9, the Examiner asserts the "appellants have not provided any evidence as such documentation to support their statements regarding the effect of these elements." First of all it is the Examiner's burden to prove that one of skill in the art would have provided both Fe and Cr and V as claimed. (See MPEP 2142). One of skill in the art would have known at the time of the invention that Fe,

Cr, V, Cu, Ni and W cannot be replaced, one by the other in any concentration in Zr alloys containing about 1% of Nb like the ones of the present invention. While it is the Examiner's burden to prove it would have been obvious to provide the invention as claimed, the following documents discussed below also show that elements such as Cr, V, Cu, Ni and W, cannot replace Fe, partially or totally without reason or motivation, because their metallurgical effects are different.

US 6,125,161 to Isobe et al. discloses an alloy containing 0.05 to 1% of Nb in which a combination of Fe and Cr contribute to improve the corrosion resistance and creep properties of the alloy when Fe is higher than or equal to 0.18% and Cr is higher than or equal to 0.07%. Isobe et al. also discloses corrosion resistance significantly decreases when Fe is higher than 0.6% and Cr higher than 0.4%. (See Col. 6, lines 24 to 36). Isobe et al. therefore teaches Fe and Cr must be both present, which shows that one cannot replace the other and are not freely substituteable. Furthermore, the upper and lower limits, for Fe and Cr, are different; if Fe and Cr were equivalent in their metallurgical effects, as the examiner asserts, these limits would be similar for both these elements.

EP 1 149 180 to Dahlbaeck et al. discloses Zr alloys containing 0.5 to 1.6% of Nb. Dahlbaeck teaches that Cr is usually considered to have a detrimental effect on the mechanical properties of the alloy and renders the control of production difficult. Nothing similar is said about Fe. (See paragraph [0010]). Cr and Fe are therefore not equivalent.

Another document disclosing it is know to one of skill in the art that Fe, Cr, Mo, V, Cu, Ni and W are not equivalent is US 5,560,790 to Nikulina et al. which discloses a Zr alloy containing 0.1-1.5 % of Nb. According to column 7, lines 54 to 60, a higher Fe content of the products provides a required composition and amount of ferriferous intermetallides which determine high anticorrosive and mechanical properties for the product. An addition of Cr contributes to nucleate very small secondary particles with a more homogeneous distribution, which decompose more easily in use in comparison to larger Fe-nucleated particles. The combination of Fe and Cr, consequently, non substitutable effects of Fe and Cr, shows again that these elements have different behaviours.

Finally, US 6,863,745 to Charquet et al. describes a Zr alloy containing 0.8 to 2.3% of Nb. According to column 3, lines 8 to13, the presence of Cr and/or V as a very partial replacement for Fe and/or Nb in the intermetallic precipitates of the type $Zr(Nb, Fe, Cr, V)_2$ has

no marked effect on corrosion at 400°C. The improved corrosion resistance at 400°C is maintained especially if Fe + Cr is at least 0.03%.

The above cited documents support that it was known in the art that Cr, Mo, V, Cu, Ni and W cannot be considered as completely equivalent to Fe, and that Fe and Cr and V would not have been substitutable as asserted. These documents insist on the advantages of coupling Fe and Cr within very precise and different limits for their respective contents, and of having a limited amount of Cr. This is also true for V which can be used for very partially for replacing Fe and Nb.

For these additional reason, withdrawal of the rejection of claims 7 to 12 is respectfully requested.

CONCLUSION

It is respectfully submitted that the application is in condition for allowance. Favorable consideration of this Reply Brief is respectfully requested.

Respectfully submitted,

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